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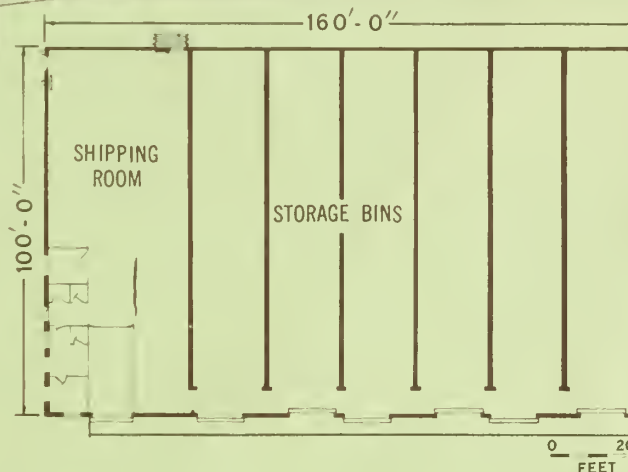
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# 1024

247  
**POTATO STORAGE**  
**60,000 Cwt.**  
**Door-Per-Bin //**



This potato storage is designed for storing and packing table stock potatoes in the fall crop areas of the United States. The storage can also be used for seed potatoes and, with careful regulation of temperatures and modification of the ventilation system to through circulation, for potatoes to be processed into chips, granules, flakes, frozen french fries, or similar products. The 60,000-cwt. storage has six separate storage bins, each with a capacity of approximately 10,000 cwt., and a shipping or packing room which permits picking out about 1,000 cwt., or two corloads, of potatoes per day. A door to each bin provides for easy truck and equipment handling during filling. A separate cull room accommodates farm trucks used to remove cull potatoes. This special room is provided to isolate odors and maintain clean conditions in the packing room.

The structure is single-story, wood frame construction containing approximately 16,000 square feet in overall floor area. It is constructed from 2- by 10-inch studs spaced 24 inches on center, and is sheathed on the inside and outside with corrugated sheet metal. Six and eight inches of glass fiber batt insulation is placed be-



tween the studs and joists, respectively, and a 6-mil polyethylene vapor barrier is attached to the inside surface of the storage. The roof decking is 5/8-inch plywood covered with a built-up roof. The storage has a concrete slab-on-grade floor.

Two gas-fired furnaces each supply 20,000 B.t.u. per hour to heat the storage during cold weather. The office and shipping room are heated separately.

Washington, D.C.

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**UNITED STATES DEPARTMENT OF AGRICULTURE**

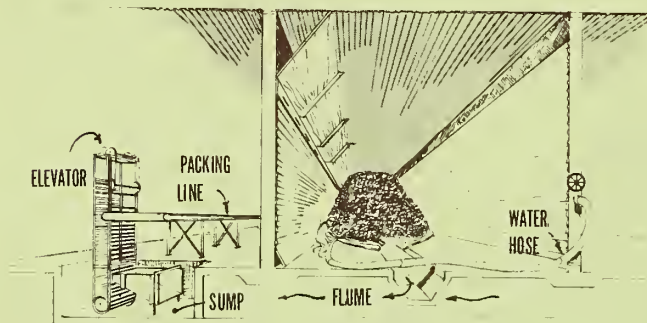
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## STORING AND HANDLING

The potatoes are removed from the storage bins by fluming. Flumes are built into each bin and are connected to a main flume that leads to a vertical elevator which transfers the potatoes to the packing line. Fluming is accomplished by pumping water from the sump, which is located directly under the vertical elevator, to the desired bin. A canvas hose is used to direct water onto the potato pile and wash the potatoes into the flume, which conveys them in water to the vertical elevator. Water is collected in the sump and recirculated. Periodically the water is pumped into a

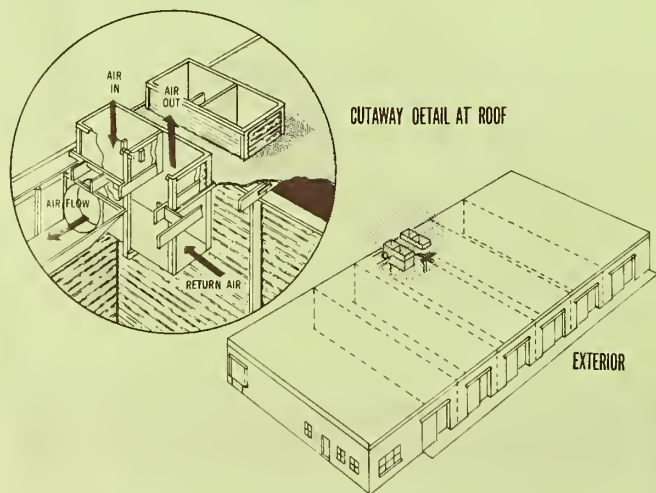


*Flume and Vertical Elevator to Packing Line*

disposal field to remove accumulated soil and trash. To provide good flotation, the flumes are sloped toward the sump at the rate of 1 inch in 15 feet. The floors within the bin are sloped toward the flumes at the rate of 1 inch in 12 feet. When the potatoes are put into storage, boards are placed over the flumes to keep potatoes from falling into the flumes. When potatoes are removed from storage, these boards are taken up as they are exposed at the face of the potato pile. This provides a constant supply of potatoes ready to be washed into the flume.

## VENTILATION

Each ventilation system has an axial flow propeller fan. The fan is capable of delivering air at the rate of

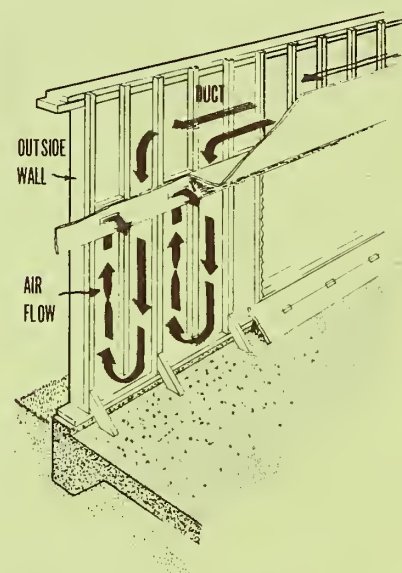


*Fan System*

22,000 c.f.m. at  $\frac{1}{2}$  inch of water static pressure and is driven by a 3-hp., 3-phase, 230-volt, AC motor.

The storage operator may control the air to the ventilation system either manually or automatically. The automatic system employs a differential thermostat in series with a proportioning thermostat. Both systems are protected with a low-temperature-limit thermostat which turns on a warning system and shuts off the ventilation fan.

This storage uses a "shell ventilation" system. Air is passed along a large supply duct located at the upper perimeter of the outside wall. Alternate stud spaces are connected to the supply duct. Air passes down the connected stud space and up the alternate stud space which has an opening to the storage bin. The air then passes over the top of the pile on its return to the fan. Potato pile temperature is controlled by



*Ventilation System and Structural Features*

heat transfer through the wall and by the wiping action of the ventilating air as it moves over the pile on its return to the fan. At the fan, air is either exhausted or recirculated, depending on the storage temperature. There is a separate ventilation system for every three bins.

Complete working drawings and specifications may be obtained through your county agricultural agent or from the extension agricultural engineer at most State agricultural colleges. There is usually a small charge.

**ORDER PLAN NO. 5979, POTATO STORAGE—  
60,000 cwt. Door-Per-Bin**

If the working drawings are not available in your State, write to the U.S. Department of Agriculture, Agricultural Engineering Research Division, Plant Industry Station, Beltsville, Md. 20705. The U.S. Department of Agriculture does not distribute drawings, but will direct you to a State that does distribute them.

These plans developed by:  
**TRANSPORTATION AND FACILITIES RESEARCH DIVISION  
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